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Dairy Herd Improvement Letter

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NATIONAL COOPERATIVE
DAIRY HERD IMPROVEMENT
PROGRAM
A dairy recordkeeping plan
for every herd

- State and National Standardized Lactation Averages by Breed for Cows on Official Test, Calving in 1981

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Dairy Herd Improvement Letter

STATE AND NATIONAL STANDARDIZED LACTATION AVERAGES BY BREED FOR COWS ON OFFICIAL TEST, CALVING IN 1981

By Rex L. Powell[1]

Dairy records processing centers provide lactation records to USDA for research that includes genetic evaluations. Records only from cows on official test are used in genetic evaluations. Nearly half of the official records are not used. Most of them are from grade cows and are not usable because of missing sire identification and failure to pass other USDA edits.[2] [3]

This report incorporates for the first time two changes in the procedures for compiling data: (1) Projection of **all** lactation records of fewer than 305 days to 305 days regardless of the reason for termination and (2) compilation of data after the January Sire Summary run. Projection of records terminated by dry dates will raise average yield over that from the previous procedure, which did not project such records. If averages in this article are compared with averages for previous years, differences in data adjustment should be considered. The projection of all records to 305 days has been estimated to increase averages by 100 to 200 pounds for milk yield and 5 to 8 pounds for fat yield. Whereas yield averages are higher because of this change in projection of records, numbers of records may be slightly lower because of the different date for compiling data. Lactation averages usually were compiled after the July Sire Summary run, but doing this after the January run made them available 6 months earlier. Table 1 gives the results on which the decision to change the date for compiling data was based. Including information for the additional 6 months increased numbers of records only slightly and had little effect on yield averages. In general, fewer records will be included in this report now than if data were compiled 6 months later.

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[1] Research geneticist (animal), Animal Improvement Programs Laboratory, Animal Science Institute, Beltsville Agricultural Research Center, Beltsville, Md. 20705.

[2] Wiggans, G. R., and King, G. J. Counts of 305-day lactation records excluded from genetic evaluations for 1982. U.S. Dept. Agr. Dairy Herd Impr. Ltr. 59(2), pp. 1-4. 1983.

[3] U.S. Department of Agriculture. Editing of lactation records used in USDA-DHIA genetic evaluations of sires and cows. U.S. Dept. Agr. Dairy Herd Impr. Ltr. ARS-44-222, 46(6), 32 pp. 1970.

The number and average standardized yields of lactation records initiated in 1981 and eligible to contribute to genetic evaluations[4] are reported by State in table 2 for Ayrshire, Guernsey, and Holstein cows and in table 3 for Jersey, Brown Swiss, and Milking Shorthorn cows. Records were standardized for age and month of calving[5] and times milked per day.[6] Records of fewer than 305 days were projected to 305 days.[7] Thus, the averages presented are on a 305-day, two-times-a-day, mature-equivalent basis. Fat percentages were computed from the average standardized milk and fat yields.

Tables 2 and 3 were compared with corresponding tables for 1980 calvings.[8] Numbers of records increased by 5 percent overall and for Holsteins, Jerseys, and Milking Shorthorns. Brown Swiss numbers increased by 6 percent, but part of that increase is due to records temporarily unavailable for 1980 data because changes in pedigree information were being made. The number of Ayrshire records declined by 1 percent, and the number of Guernsey records declined by 5 percent. Average milk and fat yields increased for all breeds. Fat percentage generally increased slightly.

The national averages for alternate years from 1971 through 1981 are given in table 4. The total number of records increased by 58 percent since 1971.[9] Increases were 72 percent for Holsteins and 25 to 29 percent for Jerseys, Brown Swiss, and Milking Shorthorns. Ayrshires essentially have maintained their numbers, whereas Guernseys have decreased by 38 percent. Increases in milk yield since 1971 were from 1,140 (Brown Swiss) to 2,308 pounds (Holsteins). Fat yield has increased but not in proportion to milk yield because of a decrease in fat percentage since 1971 for all breeds, particularly Jerseys. Changes in numbers of records and averages for particular State and breed combinations may be studied by comparing tables 2 and 3 with tables in the report[8] for 1980 and in corresponding publications for earlier years.

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[4] Because some lactation data included here may have been from cows without herdmate records, their records were not used in genetic evaluations.

[5] Norman, H. D., Miller, P. D., McDaniel, B. T., and others. USDA-DHIA factors for standardizing 305-day lactation records for age and month of calving. U.S. Dept. Agr. ARS-NE-40, 91 pp. 1974.

[6] Wiggans, G. R., and Grossman, M. Adjusting records from three-times-a-day to two-times-a-day milking basis. U.S. Dept. Agr. Dairy Herd Impr. Ltr. 56(4), pp. 7-8. 1980.

[7] Wiggans, G. R., and Powell, R. L. Projection factors for milk and fat lactation records. U.S. Dept. Agr. Dairy Herd Impr. Ltr. 56(1), 15 pp. 1980.

[8] Powell, R. L. State and national standardized lactation averages by breed for cows on official test, calving in 1980. U.S. Dept. Agr. Dairy Herd Impr. Ltr. 59(2), pp. 5-11. 1983.

[9] The earliest year for which records with missing sire identification were excluded when computing averages is 1971.

Information for cows of the Red and White breed is not included in the tables because of the small number of cows. Nationally, the 1,240 Red and White cows averaged 16,152 pounds of milk, 3.62 percent fat, and 584 pounds of fat. The averages for 1,001 cows in 1980 were 15,816 pounds of milk, 3.62 percent fat, and 573 pounds of fat.

Interpretation of changes in average yield should be made in view of the many factors that can affect it. Although genetic change is expected to have a positive effect on yield, the feed availability and cost, milk and beef prices, and characteristics of herds entering and leaving official testing programs can affect the averages in either direction.

Table 1.--Number of records and national average yield from July 1982 Sire Summary run and changes from January 1982 run by breed for cows calving in 1980

Breed	July 1982 Records	July 1982 Milk yield	July 1982 Fat yield	Change from January 1982 Records	Change from January 1982 Milk yield	Change from January 1982 Fat yield
	Number	*Pounds*	*Pounds*	*Number*	*Pounds*	*Pounds*
Ayrshire----------------	19,802	12,724	493	+34	+4	0
Guernsey---------------	51,350	11,404	526	+335	+6	0
Holstein----------------	1,389,045	17,049	614	+5,885	-5	-1
Jersey------------------	88,539	11,122	536	-49	0	0
Brown Swiss-----------	24,891	13,854	557	[1] -1,008	-1	0
Milking Shorthorn------	3,234	11,833	431	+28	-38	+1

[1] Many Brown Swiss records were recycled because of pedigree record corrections made by the breed association.

Table 2.--Number of records and State and national standardized lactation averages for Ayrshire, Guernsey, and Holstein cows on official test, calving in 1981, and with identified sires[1]

State[2]	Ayrshire				Guernsey				Holstein			
	Records	Milk	Fat	Fat	Records	Milk	Fat	Fat	Records	Milk	Fat	Fat
	Number	*Pounds*	*Percent*	*Pounds*	*Number*	*Pounds*	*Percent*	*Pounds*	*Number*	*Pounds*	*Percent*	*Pounds*
Alabama	47	12,843	3.77	484	93	10,593	4.25	451	5,808	16,438	3.55	583
Alaska	---	---	---	---	---	---	---	---	65	14,777	3.80	562
Arizona	---	---	---	---	502	12,309	4.66	574	10,195	18,492	3.61	667
Arkansas	---	---	---	---	181	10,371	4.25	441	4,161	15,751	3.38	532
California	254	14,856	3.89	577	2,332	13,138	4.62	607	166,836	19,390	3.58	695
Colorado	9	13,597	3.62	485	248	10,053	4.50	452	11,607	16,798	3.54	594
Connecticut	512	12,861	4.02	518	469	12,108	4.63	561	14,192	17,668	3.63	641
Delaware	85	14,353	4.19	601	8	12,934	4.88	631	2,328	18,289	3.63	663
Florida	218	11,585	3.52	408	188	11,102	4.26	473	4,144	16,391	3.38	555
Georgia	162	12,730	3.57	454	727	11,815	4.55	538	11,445	16,197	3.49	565
Hawaii	---	---	---	---	---	---	---	---	1,308	15,596	3.12	486
Idaho	83	12,325	3.89	479	336	11,345	4.69	531	13,531	17,416	3.51	611
Illinois	505	12,013	3.87	465	1,250	10,898	4.62	503	35,674	16,215	3.64	590
Indiana	366	13,122	3.95	519	2,816	11,363	4.76	541	27,623	16,836	3.68	619
Iowa	1,265	12,391	3.86	479	1,980	10,881	4.70	511	35,924	16,135	3.60	581
Kansas	466	11,743	3.81	448	557	10,822	4.54	492	26,430	15,758	3.57	563
Kentucky	275	11,030	3.84	424	235	10,606	4.61	489	11,397	15,996	3.58	572
Louisiana	81	10,409	3.60	375	1,022	10,296	4.33	446	7,719	15,547	3.32	517
Maine	502	12,585	3.87	488	251	11,999	4.57	549	15,171	17,553	3.56	625
Maryland	692	11,405	3.90	445	1,125	10,957	4.62	507	31,880	16,830	3.61	607
Massachusetts	511	12,553	3.93	493	338	12,109	4.60	557	11,987	17,327	3.63	629
Michigan	215	11,192	4.00	448	1,840	11,680	4.70	549	56,884	17,509	3.63	635
Minnesota	1,252	12,259	3.89	476	4,272	10,804	4.64	501	125,645	16,364	3.61	591
Mississippi	167	11,467	3.66	419	209	11,399	4.44	506	6,599	15,899	3.46	550
Missouri	94	11,865	3.73	443	1,663	10,664	4.53	484	23,060	16,188	3.54	573
Montana	172	13,734	3.70	508	71	13,070	4.78	624	2,416	16,862	3.50	590
Nebraska	190	11,031	3.98	439	490	10,907	4.59	501	13,415	15,680	3.62	567
Nevada	---	---	---	---	---	---	---	---	2,487	17,965	3.53	634
New Hampshire	539	13,393	3.88	519	116	11,726	4.44	520	8,011	17,514	3.61	632
New Jersey	22	13,556	3.87	524	148	11,559	4.64	536	9,114	17,906	3.62	649
New Mexico	197	14,801	3.75	555	399	12,781	4.32	553	9,004	18,977	3.51	666
New York	3,240	13,045	3.92	511	1,782	11,625	4.61	536	145,593	17,383	3.63	632
North Carolina	238	14,211	3.76	534	492	11,580	4.72	547	29,049	17,197	3.54	609
North Dakota	2	12,235	4.41	540	17	8,562	4.75	407	3,311	15,182	3.53	536
Ohio	1,269	12,631	3.88	490	2,406	11,794	4.66	549	51,038	17,522	3.65	639
Oklahoma	290	13,197	3.98	526	366	11,204	4.71	527	7,509	16,753	3.63	608
Oregon	179	13,243	3.93	521	980	12,004	4.55	546	13,561	17,997	3.57	642
Pennsylvania	1,341	13,648	3.93	537	4,745	11,952	4.60	550	143,167	17,491	3.65	639
Puerto Rico	2	9,405	3.24	305	---	---	---	---	1,878	11,396	3.18	363
Rhode Island	146	12,987	3.84	499	25	7,675	4.58	352	638	17,043	3.62	617
South Carolina	---	---	---	---	1,691	12,078	4.64	560	8,460	16,616	3.59	596
South Dakota	2	9,710	3.82	371	55	11,590	4.85	562	6,936	15,735	3.55	559
Tennessee	94	12,290	3.83	471	584	11,449	4.38	501	15,303	17,280	3.50	605
Texas	16	12,013	3.91	470	382	11,131	4.53	505	17,399	17,219	3.44	593
Utah	9	10,936	3.88	424	8	11,127	4.70	522	14,556	17,756	3.41	605
Vermont	1,433	13,193	3.81	502	475	11,657	4.53	528	31,990	17,069	3.56	607
Virginia	638	13,461	3.80	511	1,578	11,247	4.58	515	53,542	16,833	3.56	599
Washington	355	14,201	3.96	563	1,961	12,386	4.71	583	29,814	18,530	3.50	649
West Virginia	315	12,127	3.79	459	222	9,768	4.54	443	7,515	16,151	3.52	568
Wisconsin	1,176	12,738	3.92	499	6,881	11,404	4.76	542	173,816	17,011	3.73	634
Wyoming	---	---	---	---	22	14,635	4.46	652	851	16,354	3.37	551
United States	19,626	12,790	3.88	496	48,538	11,509	4.64	533	1,461,986	17,292	3.61	624

[1] Dashes indicate no lactation records reported.

[2] Puerto Rican data are included in USDA national standardized lactation averages.

Table 3.--Number of records and State and national standardized lactation averages for Jersey, Brown Swiss, and Milking Shorthorn cows on official test, calving in 1981, and with identified sires[1]

State[2]	Jersey				Brown Swiss				Milking Shorthorn			
	Records	Milk	Fat	Fat	Records	Milk	Fat	Fat	Records	Milk	Fat	Fat
	Number	*Pounds*	*Percent*	*Pounds*	*Number*	*Pounds*	*Percent*	*Pounds*	*Number*	*Pounds*	*Percent*	*Pounds*
Alabama	2,457	12,470	4.62	576	114	12,751	3.99	508	11	13,913	3.82	532
Alaska	---	---	---	---	---	---	---	---	---	---	---	---
Arizona	1,098	12,787	5.13	656	848	15,839	3.95	626	61	13,553	3.42	463
Arkansas	840	9,968	4.66	464	165	14,115	3.89	549	66	13,183	3.63	478
California	8,289	12,545	5.01	628	1,003	15,978	4.09	653	140	14,276	3.57	510
Colorado	236	11,425	4.67	534	595	13,558	4.19	567	---	---	---	---
Connecticut	421	11,194	4.97	556	254	13,779	3.97	548	20	11,089	3.44	382
Delaware	63	11,281	4.80	541	4	17,795	4.29	763	---	---	---	---
Florida	942	11,481	4.39	503	346	13,891	3.66	507	---	---	---	---
Georgia	1,755	10,754	4.58	493	342	14,148	3.69	522	---	---	---	---
Hawaii	---	---	---	---	---	---	---	---	---	---	---	---
Idaho	1,188	11,090	4.81	533	143	14,767	3.87	572	60	13,237	3.64	481
Illinois	1,001	9,747	4.80	468	1,388	12,918	4.02	519	233	11,779	3.52	415
Indiana	1,729	10,770	4.92	530	833	14,717	4.05	597	95	11,559	3.74	432
Iowa	2,392	10,639	4.76	507	3,066	13,320	4.04	539	405	11,358	3.63	413
Kansas	715	9,808	4.60	451	398	13,128	3.91	513	14	11,539	3.53	406
Kentucky	2,151	11,119	4.79	532	286	13,099	3.83	501	20	9,525	3.63	346
Louisiana	2,199	10,480	4.54	476	121	11,233	3.64	409	---	---	---	---
Maine	1,491	12,461	4.81	599	107	13,041	3.92	511	111	11,202	3.55	397
Maryland	510	9,343	4.78	447	289	13,315	4.00	533	37	9,879	3.67	362
Massachusetts	1,187	11,338	4.94	560	76	12,895	3.90	503	39	10,961	3.72	408
Michigan	1,969	11,373	4.94	561	350	13,428	3.94	529	63	12,286	3.53	433
Minnesota	2,709	10,347	4.86	502	1,564	13,741	4.02	553	570	12,930	3.67	474
Mississippi	1,956	10,677	4.57	487	6	12,162	3.90	474	---	---	---	---
Missouri	1,734	10,928	4.73	517	622	12,893	3.99	514	141	12,622	3.66	461
Montana	12	11,839	4.64	550	50	15,005	4.09	613	---	---	---	---
Nebraska	163	9,890	4.76	470	581	13,385	4.15	555	214	8,834	3.71	328
Nevada	454	13,451	4.79	644	1	12,670	3.51	445	---	---	---	---
New Hampshire	1,063	11,208	4.83	541	145	12,202	3.98	485	33	11,550	3.57	412
New Jersey	262	13,342	4.63	618	134	13,466	3.98	536	---	---	---	---
New Mexico	3	9,600	4.00	384	22	11,605	4.06	472	---	---	---	---
New York	4,951	11,062	4.96	548	1,609	14,029	4.01	563	29	12,151	3.59	437
North Carolina	2,359	11,483	4.78	548	293	13,931	4.04	563	---	---	---	---
North Dakota	99	9,521	4.81	458	146	13,579	4.09	556	1	13,800	4.32	596
Ohio	5,489	11,011	4.95	545	1,698	14,907	4.11	612	205	11,202	3.67	411
Oklahoma	899	10,701	4.83	517	452	12,804	4.03	517	233	12,864	3.55	457
Oregon	3,784	11,842	4.91	581	746	13,972	4.04	565	11	16,985	3.59	611
Pennsylvania	5,005	11,130	4.78	533	904	15,140	3.98	602	58	10,799	3.68	398
Puerto Rico	---	---	---	---	18	11,914	3.27	389	---	---	---	---
Rhode Island	39	10,857	4.79	520	---	---	---	---	---	---	---	---
South Carolina	4,790	11,790	4.76	561	38	11,442	3.68	421	---	---	---	---
South Dakota	111	9,949	4.81	479	464	12,578	4.03	506	116	10,401	3.54	368
Tennessee	4,448	11,492	4.62	531	446	14,645	3.91	572	2	17,490	4.34	759
Texas	5,085	10,568	4.74	501	1,257	14,542	4.02	584	45	12,907	3.69	476
Utah	666	11,620	4.75	552	120	14,201	3.88	551	1	20,180	3.88	783
Vermont	6,239	11,375	4.81	547	143	15,560	3.98	620	37	12,162	3.60	437
Virginia	801	11,720	4.76	557	121	13,689	3.96	541	10	12,125	3.46	419
Washington	3,337	12,467	5.01	624	186	15,078	3.96	598	43	14,738	3.47	511
West Virginia	319	11,650	4.53	527	16	12,431	3.98	494	---	---	---	---
Wisconsin	3,533	10,524	5.00	526	3,982	13,806	4.12	568	285	12,069	3.64	439
Wyoming	25	11,326	4.91	556	1	8,970	3.73	335	---	---	---	---
United States	92,968	11,329	4.83	547	26,493	13,950	4.03	562	3,409	11,983	3.62	434

[1] Dashes indicate no lactation records reported.

[2] Puerto Rican data are included in USDA national standardized lactation averages.

Table 4.--Number of records and national average yield by breed for cows calving in 1971-81

Breed	Year of calving						Change, 1971-81	
	1971	1973	1975	1977	1979	1981	Amount	Percentage
				Records (number)				
Ayrshire	19,478	18,683	18,695	19,467	19,466	19,626	+148	+0.8
Guernsey	78,691	69,680	62,149	56,246	51,579	48,538	-30,153	-38.3
Holstein	850,379	919,735	1,014,257	1,143,648	1,271,996	1,461,986	+611,607	+71.9
Jersey	74,132	71,557	71,812	76,785	83,164	92,968	+18,836	+25.4
Brown Swiss	21,001	21,057	21,635	23,553	24,213	26,493	+5,492	+26.2
Milking Shorthorn	2,635	2,442	2,648	2,693	3,016	3,409	+774	+29.4
				Milk (pounds)				
Ayrshire	11,457	11,322	11,730	12,167	12,492	12,790	+1,333	+11.6
Guernsey	10,231	10,133	10,573	11,003	11,231	11,509	+1,278	+12.5
Holstein	14,984	14,837	15,528	16,354	16,792	17,292	+2,308	+15.4
Jersey	9,528	9,588	10,150	10,546	10,887	11,329	+1,801	+18.9
Brown Swiss	12,810	12,658	13,063	13,502	13,676	13,950	+1,140	+8.9
Milking Shorthorn	10,217	10,182	10,596	11,448	11,497	11,983	+1,766	+17.3
				Fat (percent)				
Ayrshire	3.91	3.90	3.90	3.89	3.88	3.88	-.03	-.8
Guernsey	4.66	4.62	4.61	4.59	4.63	4.64	-.02	-.4
Holstein	3.63	3.64	3.65	3.61	3.61	3.61	-.02	-.6
Jersey	4.99	4.94	4.90	4.83	4.84	4.83	-.16	-3.2
Brown Swiss	4.03	3.99	3.97	3.96	4.01	4.03	.00	0
Milking Shorthorn	3.66	3.64	3.64	3.61	3.63	3.62	-.04	-1.1
				Fat (pounds)				
Ayrshire	448	442	457	473	484	496	+48	+10.7
Guernsey	477	469	487	506	519	533	+56	+11.7
Holstein	545	540	566	591	606	624	+79	+14.5
Jersey	476	473	497	510	527	547	+71	+14.9
Brown Swiss	516	505	519	535	548	562	+46	+8.9
Milking Shorthorn	374	371	386	414	418	434	+60	+16.0